

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Claims 1-7 (Canceled):

Claim 8 (Currently Amended): A process for preparing a primary dispersion, said process comprising:

reacting the following components a), b1), and c) and optionally b2), optionally b3), and optionally b4) in the presence of water, thereby obtaining an aqueous primary dispersion, which comprises at least one polyurethane;

wherein

a) is at least one polyisocyanate,

b1) is at least one polyol comprising a structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ one or w ~~more~~-times, wherein w is a positive integer from 10 to 200, wherein said structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ is obtained from a synthesis component selected from the group consisting of ethylene glycol, polyethylene glycol having a molar mass number average molecular weight of between 106 and 2000, and ethylene oxide, ~~wherein w is a positive integer from 10 to 200~~;

b2) is at least one polyol other than b1),

b3) is at least one compound containing at least two isocyanate-reactive groups selected from the group consisting of thiol groups and primary and secondary amino groups,

b4) is at least one monofunctional monomer having an isocyanate-reactive group, and

c) is at least one ionic or potentially ionic synthesis component,

wherein the component c) is represented by the general formula $\text{RG}-\text{R}^1-\text{DG}$,

wherein RG is at least one isocyanate reactive group,

DG is at least one actively dispersing group, and

R¹ is an aliphatic, cycloaliphatic or aromatic radical comprising 1 to 20 carbon atoms;

wherein

the fraction of the structural units $-[-\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the polyol b1) is from 10 to 90% by weight, and

the fraction of the structural units $-[-\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the sum of the components a) + b1) + b2) + b3) + b4) + c) is at least 3% by weight.

Claim 9 (Previously Presented): The process according to claim 8, wherein dispersing takes place with shear forces below 10^8 W/cm³.

Claims 10-20 (Canceled):

Claim 21 (Currently Amended): The process according to claim 8, wherein the number average molecular weight of the polyol b1) is 500 to 2000 g/mol.

Claim 22 (Previously Presented): The process according to claim 8, wherein the polyol b1) is a copolymer comprising ethylene oxide and propylene oxide.

Claim 23 (Previously Presented): The process according to claim 22, wherein the copolymer is a block copolymer.

Claim 24 (Previously Presented): The process according to claim 8, wherein the polyol b1) comprises at least one terminal structural unit -CH₂-O-H.

Claim 25 (Previously Presented): The process according to claim 8, wherein the polyol b1) is a polyesterol.

Claim 26 (Previously Presented): The process according to claim 8, wherein the z-average particle size as measured by dynamic light scattering using the Malvern® Autosizer 2 C is below 100 nm.

Claim 27 (Currently Amended): A process for preparing a primary dispersion, said process comprising:

reacting the following components a), b1), and optionally b2), optionally b3), optionally b4) and optionally c) in the presence of water, thereby obtaining an aqueous primary dispersion, which comprises at least one polyurethane;

wherein

first all components are mixed with water, to obtain an emulsion having a water phase,

then said emulsion is heated,

after the reaction temperature has been reached, a catalyst is added [[via]] to the water phase of said emulsion, and

wherein

a) is at least one polyisocyanate,

b1) is at least one polyol comprising a structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ one or w more times, wherein w is a positive integer from 10 to 200, wherein said structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ is obtained from a synthesis component selected from the group consisting of ethylene glycol, polyethylene glycol having a molar mass number average molecular weight of between 106 and 2000, and ethylene oxide, wherein w is a positive integer from 10 to 200;

b2) is at least one polyol other than b1),

b3) is at least one compound containing at least two isocyanate-reactive groups

selected from the group consisting of thiol groups and primary and secondary amino groups,

b4) is at least one monofunctional monomer having an isocyanate-reactive group, and

c) is at least one ionic or potentially ionic synthesis component,

wherein the component c) is represented by the general formula RG-R¹-DG,

wherein RG is at least one isocyanate reactive group,

DG is at least one actively dispersing group, and

R¹ is an aliphatic, cycloaliphatic or aromatic radical comprising 1 to 20 carbon atoms;

wherein

the fraction of the structural units $-[\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the

polyol b1) is from 10 to 90% by weight, and

the fraction of the structural units $-[\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the

sum of the components a) + b1) + b2) + b3) + b4) + c) is at least 3% by weight.

Claim 28 (Previously Presented): The process according to claim 27, wherein

dispersing takes place with shear forces below 10^8 W/cm³.

Claim 29 (Currently Amended): The process according to claim 27, wherein the

number average molecular weight of the polyol b1) is 500 to 2000 g/mol.

Claim 30 (Previously Presented): The process according to claim 27, wherein the

polyol b1) is a copolymer comprising ethylene oxide and propylene oxide.

Claim 31 (Previously Presented): The process according to claim 30, wherein the

copolymer is a block copolymer.

Claim 32 (Previously Presented): The process according to claim 27, wherein the polyol b1) comprises at least one terminal structural unit -CH₂-O-H.

Claim 33 (Previously Presented): The process according to claim 27, wherein the polyol b1) is a polyesterol.

Claim 34 (Previously Presented): The process according to claim 27, wherein the z-average particle size as measured by dynamic light scattering using the Malvern® Autosizer 2 C is below 100 nm.

Claim 35 (Previously Presented): A method of coating a substrate, comprising: applying the aqueous primary dispersion obtained by the process of Claim 8 to the substrate, thereby coating the substrate.

Claim 36 (Previously Presented): The method of claim 35, wherein the substrate comprises a material selected from the group consisting of wood, wood veneer, paper, board, card, textile, leather, nonwoven, plastic, glass, ceramic, metals, coated metals, and mineral building materials.

Claim 37 (Previously Presented): A method of coating a substrate, comprising: applying the aqueous primary dispersion obtained by the process of claim 27 to the substrate, thereby coating the substrate.

Claim 38 (Previously Presented): The method of claim 37, wherein the substrate comprises a material selected from the group consisting of wood, wood veneer, paper, board, card, textile, leather, nonwoven, plastic, glass, ceramic, metals, coated metals, and mineral building materials.

Claim 39 (Canceled):

Claim 40 (Previously Presented): The process according to claim 8, wherein RG is -OH.

Claim 41 (Previously Presented): The process according to claim 8, wherein RG is NHR², wherein R² is methyl, ethyl, isopropyl, n-propyl, n-butyl, iso-butyl, sec-butyl, tert-butyl, cyclopentyl or cyclohexyl.

Claim 42 (Previously Presented): The process according to claim 8, wherein RG is NHR², wherein R² is cyclohexyl.

Claim 43 (Previously Presented): The process according to claim 8, wherein the component c) is selected from the group consisting of monohydroxycarboxylic acids, monohydroxysulfonic acids, monoaminocarboxylic acids, monoaminosulfonic acids and mixtures thereof.

Claim 44 (Currently Amended): The process according to claim 8, wherein the component c) is selected from the group consisting of mercaptoacetic acid, mercaptopropionic acid, thiolactic acid, mercaptosuccinic acid, glycine, iminodiacetic acid, sarcosine,

alanine, ~~beta~~ β -alanine, leucine, isoleucine, aminobutyric acid, hydroxyacetic acid, hydroxypivalic acid, lactic acid, hydroxysuccinic acid, hydroxydecanoic acid, dimethylolpropionic acid, dimethylolbutyric acid, ethylenediaminetriacetic acid, hydroxydodecanoic acid, hydroxyhexadecanoic acid, 12-hydroxystearic acid, aminonaphthalinecarboxylic acid, hydroxyethanesulfonic acid, hydroxypropanesulfonic acid, mercaptoethanesulfonic acid, mercaptopropanesulfonic acid, aminomethanesulfonic acid, taurine, aminopropanesulfonic acid and mixtures thereof.

Claim 45 (Previously Presented): The process according to claim 8, wherein in a first step, an organic phase is prepared homogeneously and in a second step said organic phase is added to a water phase or a water phase is added to the organic phase.

Claim 46 (Previously Presented): The process according to claim 27, wherein in a first step, an organic phase is prepared homogeneously and in a second step said organic phase is added to a water phase or a water phase is added to the organic phase.

Claim 47 (Previously Presented): The process according to claim 27, wherein RG is -OH.

Claim 48 (Previously Presented): The process according to claim 27, wherein RG is NHR^2 , wherein R^2 is methyl, ethyl, isopropyl, n-propyl, n-butyl, iso-butyl, sec-butyl, tert-butyl, cyclopentyl or cyclohexyl.

Claim 49 (Previously Presented): The process according to claim 27, wherein RG is NHR^2 , wherein R^2 is cyclohexyl.

Claim 50 (Previously Presented): The process according to claim 27, wherein the component c) is selected from the group consisting of monohydroxycarboxylic acids, monohydroxysulfonic acids, monoaminocarboxylic acids, monoaminosulfonic acids and mixtures thereof.

Claim 51 (Currently Amended): The process according to claim 27, wherein the component c) is selected from the group consisting of mercaptoacetic acid, mercaptopropionic acid, thiolactic acid, mercaptosuccinic acid, glycine, iminodiacetic acid, sarcosine, alanine, β -alanine, leucine, isoleucine, aminobutyric acid, hydroxyacetic acid, hydroxypivalic acid, lactic acid, hydroxysuccinic acid, hydroxydecanoic acid, dimethylolpropionic acid, dimethylolbutyric acid, ethylenediaminetriacetic acid, hydroxydodecanoic acid, hydroxyhexadecanoic acid, 12-hydroxystearic acid, aminonaphthalinecarboxylic acid, hydroxyethanesulfonic acid, hydroxypropanesulfonic acid, mercaptoethanesulfonic acid, mercaptopropanesulfonic acid, aminomethanesulfonic acid, taurine, aminopropanesulfonic acid and mixtures thereof.

Claim 52 (Previously Presented): The process according to claim 8, wherein RG is -OH, -SH, -NH₂, or -NHR², where R² is methyl, ethyl, iso-propyl, n-propyl, n-butyl, isobutyl, sec-butyl, tert-butyl, cyclopentyl or cyclohexyl.

Claim 53 (Previously Presented): The process according to claim 27, wherein RG is -OH, -SH, -NH₂, or -NHR², wherein R² is methyl, ethyl, iso-propyl, n-propyl, n-butyl, isobutyl, sec-butyl, tert-butyl, cyclopentyl or cyclohexyl.

Claim 54 (New): A process for preparing a primary dispersion, said process comprising:

reacting the following components a), b1), and optionally b2), optionally b3), optionally b4) and optionally c) in the presence of water, thereby obtaining an aqueous primary dispersion, which comprises at least one polyurethane;

wherein

first all components are mixed with water, to obtain an emulsion having a water phase and an oil phase,
then said emulsion is heated,
after the reaction temperature has been reached, a catalyst is added to the oil phase of said emulsion, and

wherein

a) is at least one polyisocyanate,
b1) is at least one polyol comprising a structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ one or w times, wherein w is a positive integer from 10 to 200, wherein said structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ is obtained from a synthesis component selected from the group consisting of ethylene glycol, polyethylene glycol having a number average molecular weight of between 106 and 2000, and ethylene oxide;
b2) is at least one polyol other than b1),
b3) is at least one compound containing at least two isocyanate-reactive groups selected from the group consisting of thiol groups and primary and secondary amino groups,
b4) is at least one monofunctional monomer having an isocyanate-reactive group, and
c) is at least one ionic or potentially ionic synthesis component,
wherein the component c) is represented by the general formula $\text{RG}-\text{R}^1-\text{DG}$,
wherein RG is at least one isocyanate reactive group,

DG is at least one actively dispersing group, and

R¹ is an aliphatic, cycloaliphatic or aromatic radical comprising 1 to 20 carbon atoms;

wherein

the fraction of the structural units $-[-\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the polyol b1) is from 10 to 90% by weight, and

the fraction of the structural units $-[-\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the sum of the components a) + b1) + b2) + b3) + b4) + c) is at least 3% by weight.

Claim 55 (New): A process for preparing a primary dispersion, said process comprising:

reacting the following components a), b1), and optionally b2), optionally b3), optionally b4) and optionally c) in the presence of water, thereby obtaining an aqueous primary dispersion, which comprises at least one polyurethane;

wherein

first all components are mixed with water, to obtain an emulsion having a water phase and an oil phase, a catalyst is added to the water phase of said emulsion, then said emulsion is heated, and

wherein

a) is at least one polyisocyanate,

b1) is at least one polyol comprising a structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ one or w times, wherein w is a positive integer from 10 to 200, wherein said structural unit $-[-\text{CH}_2-\text{CH}_2-\text{O}-]_w-$ is obtained from a synthesis component selected from the group consisting of ethylene glycol, polyethylene glycol having a number average molecular weight of between 106 and 2000, and ethylene oxide;

b2) is at least one polyol other than b1),

b3) is at least one compound containing at least two isocyanate-reactive groups

selected from the group consisting of thiol groups and primary and secondary amino groups,

b4) is at least one monofunctional monomer having an isocyanate-reactive group, and

c) is at least one ionic or potentially ionic synthesis component,

wherein the component c) is represented by the general formula RG-R¹-DG,

wherein RG is at least one isocyanate reactive group,

DG is at least one actively dispersing group, and

R¹ is an aliphatic, cycloaliphatic or aromatic radical comprising 1 to 20 carbon atoms;

wherein

the fraction of the structural units $-[\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the

polyol b1) is from 10 to 90% by weight, and

the fraction of the structural units $-[\text{CH}_2-\text{CH}_2-\text{O}-]-$, calculated at 44 g/mol, in the

sum of the components a) + b1) + b2) + b3) + b4) + c) is at least 3% by weight.

Claim 56 (New): The process according to claim 27, wherein the component c) is not present.